our planet

The magazine of the United Nations Environment Programme - December 2009

UNEP

BAN KI-MOON
THE SKY IS THE LIMIT

LARS LØKKE RASMUSSEN
DEADLINE COPENHAGEN

BHARRAT JAGDEO
A CONVENIENT TRUTH

MOHAMED NASHEED
CLEAR AND PRESENT DANGER

GORDON BROWN
ENGINE OF GROWTH

HILLARY RODHAM CLINTON
TAKING RESPONSIBILITY AND TAKING ACTION

CLIMATE CHANGE

Copenhagen: seal the deal

Our Planet, the magazine of the United Nations Environment Programme (UNEP)
PO Box 30552, Nairobi, Kenya
Tel: (254 20)7621 234
Fax: (254 20)7623 927
e-mail: uneppub@unep.org

To view current and past issues of this publication online, please visit
www.unep.org/ourplanet

ISSN 101 - 7394

Director of Publication : Satinder Bindra
Editor : Geoffrey Lean
Coordinator : Geoff Thompson
Special Contributor : Nick Nuttall
Editorial Assistant : Wambui Munge
Distribution Manager : Manyahleshal Kebede
Design : Amina Darani
Produced by : UNEP Division of Communications and Public Information
Printed by : Progress Press
Distributed by : SMI Books

The contents of this magazine do not necessarily reflect the views or policies of UNEP or the editors, nor are they an official record. The designations employed and the presentation do not imply the expressions of any opinion whatsoever on the part of UNEP concerning the legal status of any country, territory or city or its authority or concerning the delimitation of its frontiers or boundaries.

* All dollar ($) amounts refer to US dollars.
Cover Photo: © Atlantide Phototravel/Corbis

UNEP promotes environmentally sound practices globally and in its own activities. This magazine is printed on 100% recycled paper, using vegetable-based inks and other eco-friendly practices. Our distribution policy aims to reduce UNEP's carbon footprint.

BAN KI-MOON : The sky is the limit PAGE 6
Describes the opportunities, as well as the threats, posed by climate change.

LARS LØKKE RASMUSSEN : Deadline Copenhagen PAGE 8
Addresses the global challenge of climate change and our common response.

BHARRAT JAGDEO : A convenient truth PAGE 10
Explains how leaving forests standing combats climate change, and calls for a new global commitment to facilitate this.

MOHAMED NASHEED : Clear and present danger PAGE 12
Describes how the Maldives is threatened by climate change and how it aims to be the world's first carbon-neutral country.

GORDON BROWN : Engine of growth PAGE 16
Explains how moving to a low-carbon economy will bring huge economic benefits while combating climate change.

HILLARY RODHAM CLINTON : Taking responsibility and taking action PAGE 20
Describes the United States' commitment to combating climate change.

YVO DE BOER : Decisive moment PAGE 23
Sets out the requirements for success in Copenhagen.

TASNEEM ESSOP : Remember the grass roots PAGE 27
Describes how poverty and the climate crisis are two sides of the same coin.

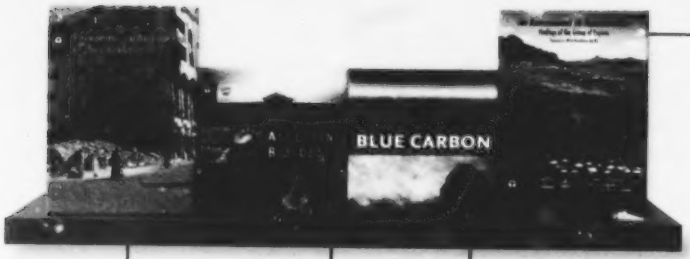
DURWOOD ZAELKE : The fast, forgotten half PAGE 30
Explains how fast-action strategies to reduce non-CO2 causes of climate change could delay warming by up to 40 years.

ALSO

books PAGE 4
reflections PAGE 5
people PAGE 14
verbatim and numbers PAGE 19
products PAGE 22
awards and events PAGE 26
www PAGE 33
star PAGE 34

books

www.unep.org/publications



An Assessment of Assessments: Findings of the Group of Experts

The Assessment of Assessments is a start-up phase towards a 'Regular Process' for global reporting and assessment of the state of the marine environment. It stems from an agreement by governments at the 2002 World Summit on Sustainable Development to address the issue of significant gaps in our understanding and management of the vital but complex processes at work in the Earth's oceans and seas. This report is a recommendation to the UN General Assembly on a course of action on the Regular Process. It calls for a mechanism that builds on existing global, regional and national institutions and processes while integrating all available information, including socio-economic data, on how our seas and oceans are actually being used.

Environmental Assessment of the Gaza Strip Following the Escalation of Hostilities in December 2008

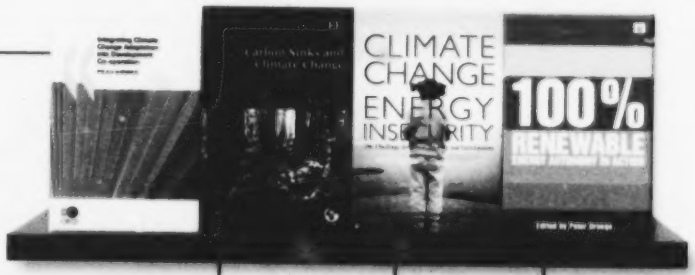
This report presents the initial action undertaken by UNEP immediately following the cessation of hostilities in the Gaza Strip in January 2009, and summarizes the scientific findings of the complex assessment process carried out by UNEP during the spring and early summer of 2009. Recommendations are provided for the remediation of environmental damage caused by the recent escalation of hostilities, as well as for longer-term improvement of the environment in the Gaza Strip.

Towards Sustainable Production and Use of Resources: Assessing Biofuels

The use of biofuels is a widely debated field with uncertainty about their risks and benefits. This report provides a thorough review of biofuels, based on research of recent publications and the involvement of many experts worldwide. Focusing on first generation biofuels, it provides policy-related information on the environmental and social costs and benefits of biofuels, considering all competing applications of biomass, including food, fibres and fuels. It examines both the concerns of critical developments, and describes the options for a more sustainable use of biomass and measures to increase resource productivity.

Blue Carbon: The Role of Healthy Oceans in Binding Carbon

This is a Rapid Response Report that puts some hard figures on the carbon-capturing potential of marine ecosystems – such as mangroves, salt marshes and seagrasses – and on the impact of marine degradation on climate change. For example, it estimates that theses ecosystems capture and store half the annual emissions of the global transport sector. It also outlines the way markets might begin paying developing countries for conserving and enhancing the marine environment's carbon capture and storage services, and the links between healthy oceans and adaptation to climate change.



Integrating Climate Change Adaptation into Development Co-operation: Policy Guidance
(OECD Publishing, 2009)

This book provides essential information and advice on how to facilitate the integration of climate change adaptation into development processes. It aims to promote an understanding of the implications of climate change on development practice and the need to mainstream climate adaptation in development. The book identifies approaches for integrating climate change adaptation into development policies at all levels and offers practical ways for donors to support developing country partners to reduce their vulnerability to climate variability and climate change.

Carbon Sinks and Climate Change: Forests in the Fight Against Global Warming
Colin A.G. Hunt (Edward Elgar Publishing, 2009)

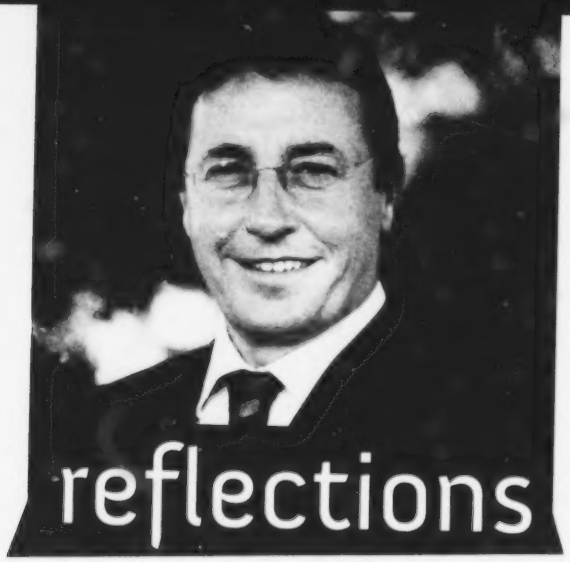
In this book, Colin Hunt deals comprehensively with the present and future role of forests in climate change policy and practice. He provides signposts for the way ahead in climate change policy and offers practical examples of forestry's role in climate change mitigation in both developed and tropical developing countries. Topics covered include measuring carbon in plantations, biodiversity benefits, potential for biofuel production, an analysis of the complexity of forestry markets and a review of the workings of carbon markets.

Climate Change and Energy Insecurity: The Challenge for Peace, Security and Development
Edited by Felix Dodds, Andrew Higham and Richard Sherman with a foreword by Achim Steiner (Earthscan, 2009)

This book offers the most comprehensive international assessment of the challenges and solutions for tackling the global insecurity arising from climate change and the energy supply crunch. It brings together leading thinkers from academia, government and civil society to analyse global energy and security threats and challenges related to climate change.

100 Per Cent Renewable: Energy Autonomy in Action
Edited By Peter Droege (Earthscan, 2009)

A 100 per cent renewable world is seen by many as an impossible dream in anything but the very long term. Nonetheless, a growing number of initiatives and plans have already achieved it. This book explains the challenges and presents a roadmap towards a 100% renewable reality. It showcases a series of pioneering efforts and their champions, and the paths to their successes. It features initiatives by individuals to visions for companies, communities and entire countries showing how the schemes work economically and with available technology.



reflections

ACHIM STEINER

UN Under-Secretary-General and Executive Director, UNEP

Seventeen years after the first United Nations climate treaty was signed in Rio the world is coming together again in Copenhagen to evolve its international response to a higher and more decisive level. No other gathering of governments on an environmental agreement has attracted more public attention. Billions of people around the globe will be waiting, and watching, to see what heads of state and ministers from over 190 nations finally decide.

The UN climate change convention meeting has brought the world together in a way perhaps not witnessed since World War II and it has brought the UN together too. Ban Ki-Moon, the UN Secretary-General has worked tirelessly to make a new, scientifically credible agreement a defining moment in human affairs. He has realized from the start that climate change represents the most extraordinary threat and disruption to security, development and human well-being. But he has also understood that it presents an inordinate opportunity to catalyse a low-carbon, resource-efficient Green Economy, able — if swiftly and comprehensively addressed — to meet the needs and aspirations of 6 billion people, rising to 9 billion by 2050.

The mobilization of the UN system towards this end, and to securing a new agreement under the UN Framework Convention on Climate Change, has been unprecedented, and UNEP and its staff have been part of that change and challenge. We have striven with UN colleagues and across such fields as science, business, energy and natural resource management to illuminate the wealth of options and choices that governments have in unleashing markets and triggering innovation.

The Intergovernmental Panel on Climate Change, co-hosted by UNEP and the World Meteorological Organization, is the benchmark on the reality of rising greenhouse gas emissions. Through the UNEP Finance Initiative, insurers, banks and investors have been mobilized to foster investments that move markets towards low-carbon companies.

Industry-wide collaboration has also accelerated: one example is a new global initiative to accelerate the use of energy-saving light bulbs with market leaders Osram and Phillips with funding from the Global Environment Facility.

Mobilizing public opinion through initiatives such as the Billion Tree Campaign and the Seal the Deal campaign have given a voice to millions who felt unable to speak. The Global Green New Deal initiative — launched last year as a way of dealing with multiple crises, including climate change — has resonated in capital cities from Seoul to Beijing and from Canberra to London, Berlin and Washington.

The central, but often overlooked, role of ecosystems in mitigating climate change, and assisting economies to adapt to it, has been brought centre stage. Only a few weeks ago UNEP's Blue Carbon report underlined the role coastal and marine ecosystems such as mangroves, sea grasses and salt marshes can play. A combination of reducing deforestation on land and restoring the coverage and health of these ecosystems could deliver up to 25 per cent of the emissions reductions needed to avoid 'dangerous' climate change. And they would also improve coastal defences, fish nurseries, water purity, tourism and employment prospects in developing and developed countries alike.

Climate change is not going to simply go away like waking from a bad nightmare if governments walk away from Copenhagen without a serious deal. You can stop the negotiators' clocks, but you cannot stop the climate clock ticking without transformative and committed action. And the longer the world waits, the more difficult, costly and damaging climate change will become.

Copenhagen represents the opportunity to plan the future in a managed and considered way. Otherwise the future will plan itself. And that may well overwhelm the coping capacities of national and global institutions, forcing societies to scramble to deal with events that are already unfolding and challenging the very foundations upon which modern civilization depends.

The sky is the limit

BAN KI-MOON

Secretary-General of the United Nations

Towards the end of September, as more than 100 Heads of State and Government gathered in New York to consider their response to climate change, nearly four million people in Kenya — the home of the UN Environment Programme — stood in urgent need of food aid. Across the Horn of Africa, 24 million people were dependent on food assistance. As the Kenyan Nobel Peace Prize laureate Wangari Maathai noted at the time, insecurity and environmental mismanagement play a significant role, but climate change provides an overarching backdrop. As its impacts increase, it threatens to deliver personal tragedy and social and economic turmoil across the globe.

This was the message I delivered to world leaders at UN Climate Change Summit. I told them that the world's leading scientists warn that we have less than ten years to halt the rise in global greenhouse gas emissions to avoid the worst-case scenarios projected by the Intergovernmental Panel on Climate Change. I called on the leaders of the industrialized countries to take significant first

steps forward so that others would take bold measures of their own, and I asked leaders from developing countries to accelerate their own efforts. If we are to beat the climate challenge all countries must do more — now.

The consequences of failure are chilling to contemplate. Climate change threatens markets, economies and development gains. It can deplete food and water supplies, provoke conflict and migration, destabilize fragile societies and even topple governments. Hyperbole? Not to the impoverished pastoralists of northern Kenya or the increasingly beleaguered farmers of California. Not to the citizens of the Maldives, already wondering how long they will have a country, or the tens of millions of people in cities as far apart as Shanghai and New Orleans, Amsterdam and Karachi, who face inundation as seas rise. Not to the hundreds of millions of the world's poorest people who have little defence against storms, floods and droughts that each year seem to get more intense.

According to the UN Office for the Coordination of Humanitarian Affairs, climate-related disasters drove 20 million people from their homes last year, nearly four times as many as were displaced by conflicts. Such statistics demonstrate that climate change is the pre-eminent geopolitical issue of our era. It is a food crisis, a humanitarian crisis and a financial crisis rolled into one.

Yet, it is also an opportunity. As realization dawns that business as usual is no longer an option, the world's best minds are working overtime to find creative solutions. Geo-engineers are looking to white roofs to cool cities and algae to absorb carbon. Entrepreneurs are racing to capitalize on the growing demand for clean and renewable energy. Policy specialists are considering the impact of energy subsidies and the potential of carbon markets.

"A deal in Copenhagen can – and must – provide the policy signals needed to deliver it. It must also support adaptation, for no matter how creative and ambitious our mitigation efforts, the fact remains that we have started processes that may take decades or more to slow and reverse."

Many government stimulus packages devised in the wake of the global economic downturn feature a strong green component. Countries such as China, the United States and my own country, the Republic of Korea, have recognized that by working to reduce greenhouse gas emissions we can also boost job creation and kick-start the industries of the future. Other countries are looking at the vast potential of forests and other ecosystems to soak up carbon emissions. Scientists, entrepreneurs and policymakers around the globe are realizing that there are almost limitless possibilities to mitigate climate change and promote sustainable prosperity. Given the right incentives, a green economy is within our grasp.

A deal in Copenhagen can — and must — provide the policy signals needed to deliver it. It must also support adaptation, for no matter how creative and ambitious our mitigation efforts, the fact remains that we have started processes that may take decades or more to slow and reverse. Climate change is upon us. It will affect the most vulnerable nations first and worst. At the September climate summit world leaders discussed a fast-track funding mechanism for adaptation, as well as a $100 billion per annum fund that would support mitigation and adaptation needs over the next decade.

Instead of suffering the impacts of climate change, developing countries, such as those in East Africa, can be part of the solution. Kenya, for example, has abundant geothermal resources that can be harnessed to generate electricity that can power an electrification programme that could underpin significant progress towards its Millennium Development Goal targets. It has forested highlands that, if protected and restored, can guarantee the water supplies its cities, agriculture and tourism industry need. The story is the same elsewhere in Africa. Rwanda has substantial methane reserves and has chosen to invest heavily in green growth. The Democratic Republic of Congo is working with the World Bank to generate hydropower that could in theory supply much of Europe. Similar schemes to harness the solar energy potential of the Sahara are also under consideration.

With imagination, the sky is the limit. We must harness the political will needed to overcome inertia and realize these and other transformative changes. There is only one change we should fear — climate change. That is why I will keep climate change at the top of my priority list until we have an ambitious, fair and comprehensive political solution to the defining challenge of our generation.

LARS LØKKE RASMUSSEN

Prime Minister of Denmark

DEADLINE COPENHAGEN

The call for global urgent action on climate change is loud and clear. Apathy is not an option. It is my sincere hope that the world lives up to its responsibility at the 2009 United Nations Climate Change Conference (COP15) in December in Copenhagen and that the Conference will be remembered as a landmark event in our efforts to turn developments around. At COP15 we have a choice to make. The moment will be in our hands. We can either seize it — or we can let it go. Whatever we choose — there is no doubt that future generations will judge us on our ability to make COP15 a decisive moment of change.

No individual, no community and no state can today escape the effects of climate change. Climate change knows no boundaries and is felt across the world.

The recipe to be used when combating the negative consequences of climate change will have to be truly global in scale and in nature. The international community, individual countries, the private sector and civil society must all work together to fight climate change with resolve and determination.

The impacts of a changing climate can be observed in many different ways, and unmitigated climate change poses grave threats to us all. If it continues at its current pace it will mean increasingly severe challenges to economic and social development processes.
We can already observe more extreme, intense and unpredictable weather conditions such as severe droughts, more floods and heavy storms. Even a stabilization of temperatures at 2° C above pre-industrial temperatures will imply new weather patterns with global consequences.

It is an unjust paradox — but nonetheless a fact — that those countries with the lowest greenhouse gas emissions are largely going to be those worst affected by climate change. And they are the countries with the least resources to use to adapt to it. Many of the world's poorest countries are already experiencing it as a tough and visible reality. These countries are often very reliant on agricultural production, which is a particularly climate-sensitive sector. And, within these countries, women and children, indigenous peoples and other key groups are often at even greater risk. The very existence of small island states is threatened by potential sea level rise. Global welfare and security are at risk.

The buck does not stop in Copenhagen. Climate change should be seen in a longer-term perspective, where Copenhagen hopefully will mark the beginning of accelerated efforts to pursue a low-carbon future around the globe. The industrialized countries must lead the way and commit to ambitious cuts. We must create the right incentives for all countries to pursue a low-carbon development path.

Energy efficiency and the reduction of emissions have many virtues of their own accord, beyond the climate consideration. Energy is a production cost, and energy saving measures are part of the answer to the current financial and economic crisis. Mitigation efforts should therefore be viewed not only as an economic burden, but also as an opportunity for the future. Green recovery programmes have the potential to stimulate private investment in low-carbon technologies, thereby developing new opportunities for employment, innovation and wealth creation.

The Danish story of economic growth during the past decades bears witness to the fact that a low-carbon growth path can be pursued without jeopardizing it. The Danish economy grew by 78 per cent over the past three decades whilst energy consumption remained virtually constant. And since the 1980s, the share of renewable energy in final energy consumption rose steadily and now amounts to approximately 20 per cent. Danish green-tech business is thriving as well.
Clean technology accounted for approximately 10 per cent of all Danish exports in 2008, and is now one of the fastest-growing export sectors.

"Danish green-tech business is thriving as well. Clean technology accounted for approximately 10 per cent of all Danish exports in 2008, and is now one of the fastest-growing export sectors."

Internationally, Denmark works actively to promote green technology and green growth, which can contribute to putting in place the necessary tools for a transition to low-carbon economies. Investments in green technologies and sustainable, affordable and stable energy supplies are crucial. Committing to green growth and investments in green technology not only helps by reducing CO_2 emissions, but is also a sound investment in our future, leading to a truly sustainable economic growth.

A global green deal is a good deal for the economy and a good deal for business. There is no contradiction between economic growth and effective climate policies. In fact, avoiding climate change is the only way to truly sustained growth. And there is no inherent contradiction between solving the financial crisis and combating climate change. On the contrary, the policies needed to address climate change are the very policies that can help to revitalize our economies.

This realization must be put to concrete actions by the World in Copenhagen. COP15 is our deadline.

A CONVENIENT TRUTH

BHARRAT JAGDEO

President of Guyana

Climate change is not impossible to overcome. The convenient truth is that the natural systems that have developed over millions of years on this planet offer solutions to it. But in order to take advantage of what we have, we first have to be pragmatic about the costs that we face to reduce emissions, and practical in the ways that we think about and use the world's resources.

The pragmatism that we must exhibit is an acceptance that we have no choice but dramatically to cut global emissions from industry and accept the short term economic pain that entails. If we fail to do this, we will be responsible for the degradation of the world and untold suffering for millions. But we must also be practical and take steps to protect the resources and mechanisms with which the world has provided us to remove carbon dioxide from the atmosphere and store it — that is, the oceans, forests and other ecosystems.

Guyana's contribution to this solution is our forests — which cover three quarters of our nation. If we chose aggressively to cut our forests and convert the land where they stand to agriculture or other commercial activities we could generate hundreds of millions of dollars every year — and in the process increase climate change, thus costing the global economy.

Guyana's imperative to tackle climate change is clear. Its economic development is intrinsically linked to its ability to help the world to tackle climate change. My country loses around 10 per cent of its GDP every year due to flooding, and it will take up to a billion dollars in adaptation funding to fix this.

Eighteen months ago I unveiled Guyana's Low Carbon Development Strategy. Its essence is the belief that our forests and the forests of other developing nations can provide more

value to the world if we keep them standing, and that — if the world is willing to pay for this service — the revenue that is generated can pay both to help Guyana to adapt to climate change and to transform its economy through a series of low-carbon investments.

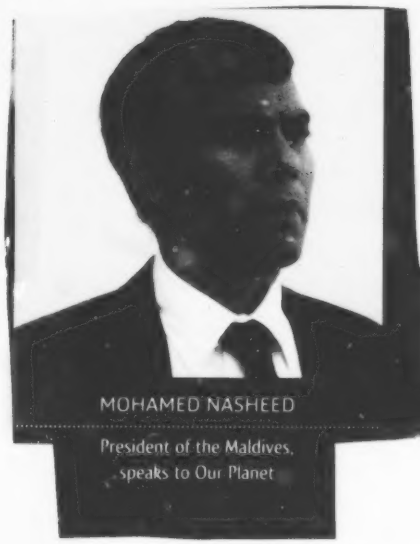
Since the strategy was unveiled, the world has lost an area of forest larger than my entire country. This has not only released more carbon into the atmosphere than every motorized vehicle on the planet in the same period, but has also reduced the Earth's ability to remove carbon from it.

The unchecked loss of forests has not happened out of malice or ignorance, but because most of the world's forested nations have no alternative but to generate income by cutting our forests. There is really only one solution to this — we must make it more economically prudent to keep forests standing than to cut them down.

The UN Framework Convention on Climate Change meeting in Copenhagen provides us with an historic opportunity to prove that climate change is not insurmountable. If proposals for the Reduction of Emissions from Deforestation and forest Degradation (REDD) are embraced they will bring benefits that go far beyond simply reducing carbon emissions — as they will secure freshwater sources, help protect food security and provide opportunities for economic development in nations like Guyana.

If the parties have the vision to do this, and agree to provide adequate funding for REDD as well as agreeing to deep cuts in emissions from industry, then we will have delivered a message to future generations that we were worthy stewards of this planet.

"... we must make it more economically prudent to keep forests standing than to cut them down."



Clear and present danger

MOHAMED NASHEED

President of the Maldives, speaks to Our Planet

Why are you, the President of the Maldives, such a strong voice on combating climate change?

When you live in the Maldives, where the highest point of land is no more than 2 metres above the sea, it is hard to deny that climate change is happening. We experience the effects of climate change every day. Climate change is, in part, responsible for coastal erosion on one third of our inhabited islands. This erosion causes a loss of land, property and contamination of groundwater.

Maldivians have lived in these islands for more than 2000 years. We do not want to trade these beautiful islands for an environmental refugee camp. The defence of the Maldives is my top priority and we have run out of time to pass the climate buck to future generations.

The Maldives is a front-line state in the battle against climate change. But climate change does not just threaten the Maldives; it threatens us all. If we can't save the Maldives today, we can't save Tokyo, New York or Hong Kong tomorrow.

You've said that climate change is a security concern and a human rights issue as well as an environmental one – in what way?

Climate change is no 'soft' environmental issue. It is increasingly being viewed as a 'hard' military threat multiplier. A 2007 report by CNA Corporation, a Pentagon-funded think-tank, co-authored by a dozen former American generals, states that unless carbon dioxide emissions are rapidly reduced, climate change will: "Create sustained natural and humanitarian disasters on a scale far beyond those we see today." These disasters threaten to destabilize entire regions, "foster[ing] the conditions for internal conflicts, extremism and a movement toward increased authoritarianism and radical ideologies."

As well as being a security multiplier, climate change could wipe out decades of development in poorer countries and threatens fundamental human rights. Left unchecked, rising temperatures will submerge low-lying countries and swamp some of the world's great coastal cities, killing and displacing millions of people.

The Maldives is taking the lead in reducing greenhouse gas emissions with a plan to reach carbon neutrality within 10 years. Why is the Maldives doing this when it has comparatively very low emissions?

I am sceptical of the conventional wisdom that suggests that small, developing countries shouldn't cut their greenhouse gas emissions. I am also against finger pointing at developed countries. Climate change is everyone's problem and therefore everyone needs to be part of a global solution.

For the Maldives, we know our greenhouse gas emissions are

tiny and our environmental efforts alone will not stop global warming. Nevertheless, we have decided to lead by example and become the world's first carbon-neutral country. In doing so, we want to put together a survival kit, a carbon-neutral manual that others can replicate, so saving us all from the impending catastrophe.

Going carbon neutral is not only the right thing to do, it also makes economic sense. Oil supplies are running out and oil prices are unpredictable. Renewable energy lessens our dependence on foreign oil, minimizing uncertainty and enhancing energy security. Moreover, while renewable infrastructure is quite costly, once it is in place the operational costs are lower than fossil fuels because raw materials such as the sun, the wind and the waves are free. So renewables offer long-term cost savings.

How do you achieve carbon neutrality?

The decision to achieve carbon neutrality is based on an eco-plan drawn up by British climate and energy experts Mark Lynas and Chris Goodall. The eco-plan proposes that 155 1.5 megawatt wind turbines would cover the nation's entire electricity usage. Half a square kilometre of solar panels and a biomass power station would provide backup energy.

The plan also proposes that the Maldives purchases EU carbon credits to offset the emissions caused by transport, especially international tourist flights. Organic waste can be used to produce fertilizers and other waste can be incinerated to reduce pollution and produce electricity.

You have noted that there is hope, that global warming can be reversed. What has to be achieved to make this happen?

We can solve the climate crisis but to do this requires radical action. The G8 Group of industrial nations have pledged to halt global temperatures from rising above 2° C from pre-industrial levels, implying carbon dioxide in the atmosphere will not rise above 450 parts per million. A couple of years ago, this goal would have been considered laudable. Recent scientific studies, coupled with events on the ground, now show the 2° C target to be woefully inadequate.

After the rapid Arctic Sea ice melt in the summer of 2007, scientists realized that global warming was happening more quickly and on a larger scale than they had anticipated. Wherever they looked — high-altitude glaciers, hydrological cycles, the spread of mosquitoes — they found change happening decades ahead of schedule. In January 2008, James Hansen, one of the world's leading climatologists, published a series of papers showing that the actual safe limit for carbon in the atmosphere was at most 350 parts per million. Anything higher than that limit, warns Hansen, could seed "irreversible, catastrophic effects" on a global scale.

We are already above that figure — the current concentration is 385 ppm and rising. For the Maldives, climate change is no vague or distant irritation but a clear and present danger to our survival. But the Maldives is no special case; simply the canary in the world's coal mine. Neighbouring Asian countries like Bangladesh are already suffering from saltwater intrusion as seas rise; Australia and the American south-west are enduring epic drought; forests across western North America are succumbing to pests which are multiplying in the growing heat. And all of this is with temperature increases of less than 1 degree — why On Earth would we be aiming for 2° C?

The world has the resources and technological know-how to make massive cuts in global greenhouse gas emissions. What is lacking is not scientific knowledge but political will. Many politicians are making laudable efforts to fight global warming. For the most part, however, politicians will not act radically unless their electorates demand radical action.

We need a global movement to force rapid change. To this end, the United Nations has launched a global petition that people can sign online, urging world leaders to 'Seal the Deal' on climate change at the Copenhagen conference this December. And activist organizations such as 350.org are staging big global protests to ensure that the voices of ordinary people are heard by the Copenhagen negotiators. Climate change is too important to be left to politicians and negotiators to solve on their own. It is everyone's responsibility to make their voices — and votes — heard.

people

GISELE BÜNDCHEN

The face of some of the world's most exclusive products has now become the new face of global environmental action. In September 2009, Brazilian-born supermodel Gisele Bündchen, one of the most recognized top models of all time, was designated Goodwill Ambassador for the United Nations Environment Programme (UNEP). In her new role, Gisele, who has long been a committed and passionate environmentalist, will help UNEP in its mission to raise awareness and inspire action to protect the environment, focusing attention on some of the biggest threats facing the planet, climate change and environmental degradation.

CONNIE HEDEGAARD

A major voice on the international stage, Connie Hedegaard has helped bring the world's attention to the visible consequences of global warming and the need for all countries to act urgently to combat climate change. Nationally and internationally, Hedegaard, the Danish Minister for Climate and Energy, has been a strong advocate for sustainable economic growth, sustainable energy and green, energy-efficient solutions. She was a driving force behind her own country's world-leading energy policies that demonstrate that dealing with climate change is not an anti-growth agenda. In her ministerial capacity Hedegaard has another big role to play in climate change leadership: hosting the UN's global climate change discussions in Copenhagen – a global meeting seeking to find a way for the entire world to unite around a climate change plan that is both fair and effective.

BILL WEIHL

Bill Weihl is Google's 'green-energy czar' leading the Internet giant's charge into clean power and carbon neutrality. Under Weihls' guidance Google is striding into the renewable-energy economy. Not only has it reduced its own power consumption by more than 50 per cent, the company has invested hundreds of millions of dollars in renewable energy – both by providing seed funding to small solar and wind energy start-up companies, and by supporting a lab of its own researchers. With its power savings, its use of renewable energy and carefully selected carbon offsets, the company has become carbon neutral. In recognition of his contribution, Weihl, a former professor at the Massachusetts Institute of Technology, was named one of Time Magazine's 2009 Heroes of the Environment.

YUMI SOMEYA

Tokyo eco-entrepreneur, Yumi Someya powers vehicles and generates electricity with used cooking oil. In the early 1990s her family-owned recycling company together with Hokkaido University produced the world's first biodiesel derived from the oil cooks throw away every day. Today this innovative biofuel, called Vegetable Diesel Fuel (VDF), powers the company's used oil collecting vehicles, some of Tokyo's buses and service vehicles, and it also generates electricity at music and cultural events in the city. The exhaust from VDF has half the particulate matter of conventional diesel, emits no sulfur oxides, and smells more like a kitchen than a car. Someya is a 2009 Time Magazine Hero of the Environment.

TEWOLDE BERHAN GEBRE EGZIABHER

Dr Tewolde is a dedicated environmental champion of his native Ethiopia and of Africa more broadly. His curriculum vitae shows a depth and breadth of public service that has involved safeguarding biodiversity and the traditional rights of farmers and communities to their genetic resources. Dr Tewolde has been a long-serving negotiator and representative of Ethiopia and other African nations in a long list of international biodiversity-related forums such as the Convention on Biological Diversity, the Cartagena Protocol on Biosafety, and the International Treaty for Plant Genetic Resources for Food and Agriculture. He worked with the African Union in the development of model laws addressing the protection of the rights of communities, farmers and breeders, the control of access to biological resources; and safety in biotechnology. Dr Tewolde is a past winner of the UNEP Champions of the Earth Award, and the Right Livelihood Award.

VEERABHADRAN RAMANATHAN

Professor Veerabhadran Ramanathan is among the most distinguished climatologists in the world, and his work has made a major contribution to our understanding of the severity of human impact on climate. His earlier research demonstrated the greenhouse effects of chlorofluorocarbons (CFCs) and other pollutants. Among other breakthroughs, he revealed the global cooling effects of clouds on climate, and showed that South Asian 'brown clouds' caused by the burning of fossil fuels can infuence monsoonal rainfall and consequently affect the Indian rice harvest. More recently he explained how black carbon particles in brown clouds can contribute significantly to the warming of the upper atmosphere. A professor of atmospheric and climate sciences at the University of California, San Diego, Ramanathan has been recognized for his outstanding contribution to the environment in numerous awards including the 2009 Tyler Environmental Prize.

YUGRATNA SRIVASTAVA

How many 13-year-olds do you know that have spoken directly to the world's leaders in person? That is exactly what Yugratna Srivastava did in September when she addressed the opening ceremony of the United Nations Summit on climate change. Representing the world's youth, she called for a fair, just and action-oriented post-Kyoto agreement. From Shamli in India, Yugratna has been a young environmental activist since joining the non-governmental organization, Tarumitra (Friends of Trees). In 2008 and 2009 she participated in UNEP's TUNZA youth conferences and is the first Indian child to be elected to the Junior Board of TUNZA. Her passion and commitment caught the attention of UNEP, and now it has caught the attention of the world.

SUSAN SOLOMON

Few people have gone to the ends of the earth to study human impact on our environment. Susan Solomon is one of them. She led pioneering scientific expeditions to Antarctica, which confirmed fears that chlorofluorocarbons (CFCs) were contributing to the 'hole' in the ozone layer. In recent years Dr Solomon has concentrated on climate change science. Her work has shown that levels of carbon dioxide expected in this century will lead to long-lasting changes, such as widespread drought in certain regions and rises in sea level that will drown many low-lying coastal areas. She was among the IPCC scientists who helped the world understand the severity of global warming and were awarded the 2007 Nobel Peace Prize. Dr Solomon won the Volvo Environment Prize for 2009.

Engine of growth

GORDON BROWN

Prime Minister of the
United Kingdom of Great Britain
and Northern Ireland

Two centuries ago, Britain exploited its plentiful supplies of coal to fire an industrial revolution which transformed it into a global economic powerhouse. Today, twenty-first century Britain will reap the rewards of a new industrial revolution built on green energy.

Determined again to be at the forefront of change, the UK is the world's largest producer of electricity from offshore wind; leading a new wave of nuclear power; and pioneering the technologies which make fossil fuels clean.

"So our approach has a triple bottom line: simultaneously creating long-term growth and employment; reducing greenhouse gas emissions; and increasing energy security."

Why? Because tackling climate change is not only essential to preserve the future health of the planet; it is also an engine of economic growth and prosperity. In the UK and many other countries, the low-carbon transformation is already helping to drive recovery from the present downturn providing new growth, new jobs, new industries and new export markets.

Achieving a new international agreement in Copenhagen is therefore not just an environmental necessity; it is an economic necessity.

The costs of climate change are now understood. Three years ago, the Stern Report I commissioned concluded that the economic damage of unchecked global warming could amount to 5–20 per cent of global GDP — an economic cost in the twenty-first century greater than the losses caused by the two world wars and Great Depression of the twentieth century.

But what is now even more striking are the benefits of moving to a low-carbon economy. In the first place, more efficient consumption of energy will bring greater overall productivity, as resources once directed to meet fuel bills are released for investment. At the same time the need for low-carbon energy production and infrastructure will require $26.3 trillion of investment up to 2030, according to estimates from the International Energy Agency. This in turn will create huge markets for goods and services across a wide range of low-carbon and energy-efficient technologies and in their accompanying infrastructure, construction and service sectors. Already larger than defence and aerospace combined, the global environmental sector could by 2015 be worth £4.3 trillion and sustain tens of millions of jobs. A wave of innovation will also accompany the decarbonization drive. And as innovations in one area feed into others, the economic potential and benefits will ripple out across the global economy.

It is unsurprising, therefore, that over the last year governments across the world have made green investment a major part of their economic stimulus packages.

In the wake of the credit crisis, governments are having to adopt strongly activist strategies to ensure the right conditions for private investment in the key sectors which will provide the engines of the next phase of growth. This is especially true in the case of the low-carbon economy. Unlike other strategic sectors, this market is almost entirely driven by government policy to reduce emissions and improve energy security.

The drive to decarbonize our economies carries some costs. Energy prices will rise, moderately. But as growth returns, these costs are affordable, especially as energy efficiency measures cut demand and therefore energy bills.

And it is a stark fact that a high-carbon energy future would be more expensive, not less. Excessive dependence on imported oil and gas — some of it from politically unstable parts of the world — exposes us to unacceptable risks, both economic and political. So the low-carbon path is also the route to greater energy security.

So our approach has a triple bottom line: simultaneously creating long-term growth and employment; reducing greenhouse gas emissions; and increasing energy security.

And of course the UK is by no means alone. The EU has adopted legally binding targets to reduce emissions by 20 per cent on 1990 levels by 2020 — or 30 per cent under a strong international agreement. Emissions trading systems are being legislated for in the US and Canada, in Australia and soon in Japan. China has set itself tough targets to improve its energy efficiency and use of renewables and India has announced ambitious plans to invest in solar power. Across the world, last year saw more investment in power generation from renewables than from fossil fuels for the first time.

So these are global trends. Yet they remain fragile. This is why global agreement on a new climate change regime in Copenhagen is so important. We must put in place the international regime which will provide low-carbon investors and businesses with the certainty and confidence they need.

The UK Government wants an agreement that is ambitious, effective and fair. Ambitious, in that it must put the world on a path to limiting the average global temperature rise to 2° C; effective, by establishing market mechanisms to reduce emissions efficiently alongside a strong regime of monitoring and verification; and fair, in providing help to allow developing as well as developed countries tackle climate change.

The last of these is particularly important. Climate change presents a stark injustice: it has been largely caused by the emissions of the richest countries, yet its severest effects are being felt by the poorest. The Copenhagen deal must therefore help the poorest and most vulnerable countries adapt to the changes already now inevitable and support their low-carbon and climate-resilient growth paths.

That is why I put forward in June a set of proposals for a climate finance agreement between developed and developing countries — raising $100 billion per year from public and private sources by 2020.

Climate change presents an unprecedented challenge to humankind. But there is a solution within our grasp, which will bring huge economic benefits today while protecting the future for our children and grandchildren.

Achieving an agreement will require world leaders to bridge our remaining differences and seize these opportunities. But I believe it can be done.

verbatim

Paul Krugman, New York Times columnist

"Even as climate modelers have been reaching consensus on the view that the threat is worse than we realized, economic modelers have been reaching consensus on the view that the costs of emission control are lower than many feared."

President of the Maldives, Mohamed Nasheed, addressing world leaders at the United Nations' Summit on Climate Change in September 2009

"If things go business as usual...our country will not exist."

UN General Assembly President Ali Treki, addressing world leaders at the United Nations' Summit on Climate Change in September 2009

"Climate changes such as rising sea levels, floods, droughts, hurricanes and other changed weather patterns are threatening not only hard-won progress in the battle against poverty, but the existence of entire nations."

John Rowe, CEO of Exelon, an electric utility company, in a speech at the national conference of the American Council for an Energy Efficient Economy

"Putting a price on carbon is essential, because it will force us to do the cheapest things, like energy efficiency, first."

WWF International Director General, James Leape, at a survey launch on the margins of the climate change negotiations in Bangkok in September 2009

"Agreement in Copenhagen coupled with progress on national initiatives will be a signal to investors that REDD can and will succeed, and will ensure forests are more valuable standing than cut."

Kenyan Prime Minister, Raila Odinga, addressing delegates at the UN General Assembly in New York in September 2009

"We are the victims of the rich world's acts and omissions, and so we do need large amounts of money in assistance and private sector investment to reverse the course of events."

numbers

135,000,000,000

79

10

23,000,000

4

60

15.2

60

Taking Responsibility and Taking Action

HILLARY RODHAM CLINTON

Secretary of State, USA

Climate change is a global challenge that threatens every nation, no matter how large or small, wealthy or poor. The threat is serious, it is urgent, and it is growing. And just as no nation can escape the potential impact of climate change — rising sea levels, storms, droughts and conflicts over dwindling resources — no nation can meet the challenge alone. This is a time for international cooperation and every nation must work together to meet our obligations and seize the limitless opportunities of a clean energy future.

We are under no illusion that this will be easy. The challenge is to create a global framework that recognizes the different needs and responsibilities of developed and developing countries alike.

The United States and other countries that have been the biggest historic emitters of greenhouse gases have a responsibility to take the lead in reducing our carbon footprint and ensuring financial and technical support for developing nations that are the most vulnerable and least prepared to meet the severe effects of climate change. We will work together to develop and disseminate clean energy technology that can help developing nations leap-frog the dirtier technologies of the past and reduce emissions while growing their economies.

The large developing nations that will produce the vast majority of the growth in global carbon emissions in the decades ahead must do their part, as well. All the largest emitters must act together if we are going to make a difference.

The United States is taking responsibility and taking action. The Obama Administration is committed to deep reductions in greenhouse gas emissions with a plan that will dramatically change the way we produce, consume and conserve energy, and in the process spark an explosion of new investment, and millions of jobs. Our country has done more to invest in clean energy and reduce emissions in the last year than at any other time in our history.

We are making historic investments in renewable energy, with the aim of doubling the generating capacity from wind and other renewable resources in three years. We are reducing energy waste in our homes, buildings and appliances, and developing carbon capture technology to clean up our coal plants. And we have proposed steps to increase fuel economy and reduce emissions for all new cars and trucks.

Complementing our efforts at home, the United States has launched an unprecedented effort to engage allies and partners around the world in the fight against climate change. The Obama Administration is deeply committed to forging the international consensus needed to meet this global crisis and moving past the old divisions that have stood in the way of progress for too long.

We are realistic about the doubts and difficulties we will have to overcome to reach this goal, especially in this time of economic uncertainty. But taking action on climate change is a smart investment in future growth and prosperity. And that is our goal: we are pursuing international agreements that will allow all nations to grow, raise living standards, and lift their people out of poverty without endangering the planet.

"We are pursuing international agreements that will allow all nations to grow, raise living standards, and lift their people out of poverty without endangering the planet."

Addressing climate change must be about more than reducing greenhouse gas emissions, it must be about securing a pathway for sustainable development. And the only sustainable path for the future is through clean energy development.

Earlier this year I caught a glimpse of that future. I toured the Taiyang Gong power plant in Beijing, which produces electricity for a million homes and the US embassy. It's state-of-the-art technology, the result of collaboration between General Electric and a number of Chinese firms, captures heat that would normally be lost, saving money and reducing emissions. If the world is going to rise to the great challenge of our times — the fight against climate change — it will take exactly this kind of international partnership.

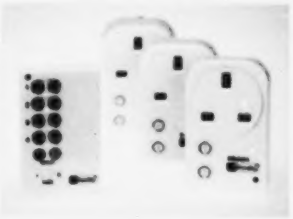
We know the way, now we just need the will.

products

Fashion for style and sustainability
In their former lives, the clothing and accessories made by Finnish fashion designer Globe Hope were hospital surgery linens, army wear, work outfits and various other vintage fabrics. With an innovative 'reuse, recycle' flair, Globe has given new life and style to these old fabrics. Their carry bags are made out of sail material and sailors' uniforms, and the label inside each one even shows where the boat they belonged to has travelled. Their range also contains down coats made from old sleeping bags, sun dresses from old linen tea towels, purses made from nurses' uniforms, and mix-n-match 3-in-1 shoes!
www.globehope.com/

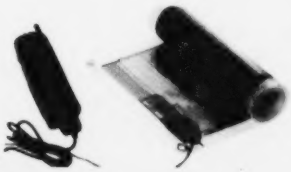
Portable hydropower
The Hydro-Electric Barrel Generator, or HEB, is a floating waterwheel that can generate electricity when set up in a river or stream regardless of the water's depth and speed. It is quiet, light weight, easy to transport and install, cost effective to manufacture, has low capital outlay per kilowatt of electricity and does not interrupt river flow. The barrel is one-piece moulded plastic with paddle treads. The advantage of this particular design is increased efficiency as the water flows past the barrel. The HEB has the potential to help many people harness the power of rivers and streams while keeping the impact on the environment to a minimum.
www.hydro-electric-barrel.com/index.html

A well-Kast light
This award-wining desk lamp, the Kast LED Task Light, has been manufactured with sustainability in mind. It uses over 80 per cent recyclable aluminum and steel, is composed of 40 per cent recycled material of which 27 per cent is post-consumer recycled content, and has powder coat finishes that are 100 per cent solvent free. It has two five-watt LED clusters, which offer an average rated life of 100,000 hours, ten times greater than most compact fluorescent lamps. In addition, the LED diodes are nearly 25 per cent more energy efficient than comparable compact fluorescent technology.
www.details-worktools.com



Bye Bye to wasted power
When left on standby, appliances such as TVs, computers and stereos use as much as 25 per cent of the energy they consume during full operation. The average household has up to a dozen gadgets left on standby at any one time, unnecessarily burning up power. A new device called Bye Bye Standby offers a convenient way to switch off up to 12 devices at the touch of a button. Simply plug Bye Bye Standby into a wall socket and then plug your appliance or extension lead into that. Then, when you leave the room, each of your devices can be switched off separately or as a group with the press of a remote control button.
www.byebyestandby.com/homeindex.php

Elementary, my dear Wattson
Wattson is the latest in gadgets that tell you how much electricity you are using. This one glows blue when you're using less electricity than normal, purple when using an average amount, and it flashes red when you're consuming a lot. It also tells you how much your annual electricity bill would be based on what you're using at any particular second. Studies show that electricity-monitoring devices can lead to household savings of up to 25 per cent on your annual electricity bills and accompanying CO_2 cuts, of course.
www.diykyoto.co.uk



Take-anywhere solar charger
Ideal for adventurers wanting to lighten their load, the SolarRoll is a very versatile solar panel. Lightweight, flexible, durable and waterproof, the SolarRoll can be used to charge your cell phone, MP3 or digital camera. It comes in three models that produce three different outputs: 4.5, 9, and 14 watts, so you can choose the size that suits your needs best. The SolarRoll can even charge a car battery!
http://www.brunton.com/

DECISIVE MOMENT

YVO DE BOER

Executive Secretary of the UN Framework Convention on Climate Change

The UN Climate Change Conference in Copenhagen is the moment in history when humanity has the opportunity to rise to the challenge and decisively deal with climate change. Beyond a shadow of a doubt, greenhouse gas emissions have to be radically reduced to keep the world from sliding into climate chaos.

Overwhelming scientific evidence — as shown in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) — demonstrates that climate change will threaten economic growth and long-term prosperity, as well as the very survival of the most vulnerable people. IPCC projections indicate that, if emissions continue to rise at their current pace and are allowed to double from their pre-industrial level, the world will face an average temperature rise of around 3° C this century. Serious impacts are associated with such a scenario, including sea-level rise, shifts in growing seasons, and increasing frequency and intensity of extreme weather events like storms, floods and droughts.

There are compelling economic reasons for a robust international response and for quickly shifting towards a low-carbon society. The IPCC clearly states that the costs of inaction would be considerably higher than those of action. According to the International Energy Agency's World Energy Outlook 2009, every year that the international community puts off a comprehensive deal adds around $500 billion dollars to the investment needed between 2010 and 2020 in the energy sector. Many countries are increasingly looking to the opportunities that a low-carbon economy can offer. The UN Environment Programme says that the global market for environmental products and services is projected to double from $1.4 trillion at present to $2.7 trillion by 2020, creating millions of new green jobs globally.

So what are the expectations for the UN climate change process? In 2007 in Bali, the 192 parties of the UN Framework Convention on Climate Change committed themselves to launching negotiations on strengthened action — culminating in an ambitious agreed outcome at the end of 2009, which needs to enter into force before January 2013. I am certain that the deal will be clinched in Copenhagen in December, even if it is not possible for a fully fledged legal treaty to emerge from the meeting.

The reason I am confident is that more than 100 world leaders meeting at the Secretary-General's Summit on Climate Change in New York in September expressed their determination to seal a comprehensive, ambitious and fair climate change deal in Copenhagen this year. The leaders pledged to provide the necessary guidance to negotiators. And they called for a deal that provides clarity on five key political essentials.

The first essential is enhanced action to assist the most vulnerable and the poorest to adapt to the impacts of climate change. Leaders emphasized that climate change threatens their economic viability, social development and even territorial integrity. More than 100 parties to the UN Framework Convention on Climate Change are least developed countries, which contribute the least to global greenhouse gas emissions and will be affected the most.

The second essential is a set of ambitious legally binding emission reduction targets by industrialized countries. Without them, the international community will not be taking the necessary action to address climate change, and developing countries will not have confidence that there is a willingness by industrialized countries to take the lead in solving a problem that they have caused.

The most stringent IPCC scenario — which would stabilize temperature increases at around 2–2.4° C above pre-industrial levels — shows that worldwide emissions would need to be cut by at least 50 per cent by 2050. For this to happen, industrialized country emissions would need to decline by 25–40 per cent over 1990 levels by 2020 and developing countries would need to peak in the next 10–15 years. A global solution to climate change, including mid-term targets, must match up to these figures.

The third deliverable for Copenhagen is clarity on the extent

to which major developing countries are able to undertake nationally appropriate mitigation actions beyond what they are already doing. For many industrialized countries, particularly the US, it will be very difficult to conclude an agreement unless they can see that these countries are also willing to engage further.

A number of developing countries — such as China, India, Brazil and South Africa — have already developed national climate change or energy strategies that indicate the extent to which they feel that they are able, within the boundaries of their economic realities, to address the issue. Many developing countries have come forward with ideas for further nationally appropriate mitigation measures that they could take.

The fourth essential relates to finance. The magnitude of developing-country action will largely depend on the effective delivery of finance and clean technology through international cooperative action. There must be clarity on how significant financial resources will be generated to help developing countries both limit the growth of their emissions and adapt to the impacts of climate change.

It is quite clear that costs for both adaptation and mitigation will increase in future, and that public money will have to kick start action and lead the way. The essential issue is that mechanisms are put in place which allow public and private sector finance to be significantly scaled up over time so that funding for climate action in the developing world does not have to be renegotiated every year. And there is broad agreement in the negotiations that the focus of support must be for the poorest countries that are most vulnerable to climate change and yet the least responsible for it.

The fifth political essential is a review of the governance structure under the convention. Much of the currently available funding has not reached developing countries in a way that is regarded as efficient or beneficial. If significant financial resources are to be generated for mitigation and adaptation, developing countries will want to have a representative say in how that money is to be allocated and spent.

"The first essential is enhanced action to assist the most vulnerable and the poorest to adapt to the impacts of climate change."

Many important concerns will feature in the negotiations. But clarity on these five main areas is essential for success at Copenhagen. The importance of the conference for the world's future cannot be underestimated. A Copenhagen deal is an unequivocal requirement for stopping climate change from slipping out of control, for transitioning into global green economic growth, and, most urgently, for helping the world, especially the most vulnerable, adapt to impacts that are now inevitable.

awards and events

UNEP SASAKAWA PRIZE

In a year when global leaders meet for the most important climate conference since 1997, the 2009–2010 Sasakawa Prize is appropriately themed 'Green Solutions to Combat Climate Change'. The Prize honours deserving laureates in the sustainable development field. The winners also receive a cash prize of $200,000 to enable the growth and replication of their groundbreaking initiatives. The 2009–2010 prize will be awarded in February at the meeting of UNEP's Governing Council.

www.unep.org/sasakawa

UNITED NATIONS CLIMATE CHANGE CONFERENCE

The United Nations Climate Change Conference (COP 15) takes place in Copenhagen on 7–18 December 2009. Representatives from 193 parties will convene in Copenhagen seeking to seal the deal on a fair, comprehensive and scientifically rigorous climate agreement for the post-2012 period. A wide range of environmental and business events will take place in Copenhagen to coincide with the Conference. Among them will be a UN Seal the Deal! installation in Magasin Metro Square where hundreds of cloth banners which form part of the historic Climate Petition will be on display from 5–19 December.

Sign the Climate Petition and follow the campaign at: www.sealthedeal2009.org

UNEP GOVERNING COUNCIL

The Eleventh Special Session of UNEP's Governing Council and Global Ministerial Environment Forum will take place on 21–26 February 2010. The overarching theme for the meeting will be 'Environment in the multilateral system', and this will be broken down into three areas to reflect key topics on the international agenda: international environmental governance and sustainable development; the green economy; and biodiversity and ecosystems. In addition to government ministers, UN heads and leaders form trade unions, civil society and business will also attend.

www.unep.org

2010 INTERNATIONAL YEAR OF BIODIVERSITY

The 2010 International Year of Biodiversity will be launched in Paris on 21 January 2010. It is an opportunity for the entire world to recognize the importance of biodiversity for all life on Earth, reflect on our achievements to safeguard biodiversity and focus on the urgency of our challenge to reduce the rate of biodiversity loss. Through activities around the world during the 2010 International Year of Biodiversity and beyond, the global community will work together to ensure a sustainable future for us all.

www.cbd.int/2010

Convention on Biological Diversity

INTERNATIONAL DAY OF CLIMATE ACTION

On 24 October, people at over 5,200 events in 181 countries around the world, came together in one of the most widespread days of environmental action in the planet's history to call for strong action and bold leadership on the climate crisis. The International Day of Climate Action was organized by the 350 global warming campaign. On this day, the number 350, which refers to the parts per million of CO_2 scientists say is the safe upper limit in the atmosphere, was boldly displayed in community events in almost every country on the planet.

www.350.org

HEROES OF THE ENVIRONMENT 2009

From saving wild mountain rivers in China to measuring the Arctic's icy expanse, from protecting the lush forests of Africa to conducting a feisty online debate, Time Magazine's 2009 Heroes of the Environment are among the most innovative and influential protectors of the planet. This year, *Time* recognized 30 heroes for providing both inspiration and action and making a difference in the world. From grassroots community people to international celebrities, the 2009 heroes are men and women who prove that we can all make a difference.

www.time.com/time

TASNEEM ESSOP

International Climate Policy Advocate
for WWF South Africa and
former Minister of the Environment,
Planning and Economic Development,
Western Cape

Remember the grass roots

"Africa needs to define its own path. It can simultaneously deal with the dual crises of poverty and climate change by building a low emission, climate resilient society and economy.

Climate change is a poverty issue. It is the poorest of the world who are the most vulnerable to its impacts and who will be hardest hit — and yet they did not cause it. Global solutions must therefore be pro-poor.

Up to 2 billion people live in extreme poverty worldwide. In sub-Saharan Africa alone about 314 million people — one in every two — live on less than a dollar a day: a third of Africa's people suffer from malnutrition, less than half have access to health care and over 300 million cannot get safe water. Fewer than a quarter of African households have access to electricity. Climate change will worsen existing poverty and vulnerabilities, particularly in countries heavily dependent on natural resources.

The Intergovernmental Panel on Climate Change shows that the threats to Africa are severe. It is expected that agricultural yields will decrease by 50 per cent by 2050, 75–250 million people will be exposed to increased water stress, about 70 million people will face the risk of coastal flooding because of sea level rise by 2080 and there will be a significant increase in health impacts. The most vulnerable — the poor and, especially, women — will bear the brunt .

Rural and coastal African communities largely depend on natural resources for their livelihood, and these will be threatened by climate change. Agriculture and fisheries — which are already on the edge of survival in many parts of Africa — will become even less viable. Even minor changes to rainfall patterns and increased severity of droughts and floods threaten food security and livelihoods.

African cities are growing rapidly. The urban population grew tenfold from 30.7 million to 309.6 million between 1950 and 2000: by 2025 more than half of the continent's population will be living in towns and cities.

Migration to cities is largely driven by the hope of survival, and the growing effects of climate change being experienced in rural areas will certainly increase it. The urban poor generally live in informal settlements — with limited access to clean water, decent housing and electricity — often in the most environmentally degraded and unsafe areas, particularly vulnerable to frequent flooding, spreading of diseases and, in some regions, fires.

Climate change is thus an economic and humanitarian, as well as an environmental, crisis. So African countries are justified in calling on developed nations to take the lead by drastically reducing their domestic emissions and by providing funding, technology and capacity-building support to developing countries to build climate resilience and take actions to reduce emissions. They argue that developed countries should bear the historical responsibility for the global warming problems we face today, that developing countries have the right to develop and that sharing the remaining atmospheric space should provide for this.

Yet while developed nations must take the lead in the transition to a low emission future, it is critical for developing ones — especially in Africa — not to be left behind. African leaders and decisionmakers should not believe that they need the current dominant economic growth model of the developed world to deal with their countries' development challenges. We should learn from the failures of the existing economic system which has increased the gap between rich and poor worldwide and placed the planet and its people at risk through unsustainable consumption and production; the solution is not to be found in using the same model as caused these problems or by taking a business-as-usual approach. It is a false notion that climate protection is an economic disincentive. In reality there can be no trade-off between the environment and the economy.

Africa needs to define its own path. It can simultaneously deal with the dual crises of poverty and climate change by building a low-emission, climate-resilient society and economy. This would put people and the planet first, promote sustainable growth and development and aim at eradicating poverty and ending inequality. Investing in renewable energy, for example, would not only provide access to clean electricity, but create jobs, provide business opportunities and improve everyone's quality of life. Empowering local communities and building local economies would be key features, while drawing on indigenous knowledge, especially rich in Africa, would be a good basis for promoting sustainable agricultural practices.

All developing countries, including the least developed, must plan for this transition. We need to ensure that they all participate in and benefit from a future green economy. It is vital that least developed countries "leapfrog" to such a transition and not remain in their present poverty trap.

African countries have rightly made adaptation to climate change a priority, but we also have an important opportunity to set a new agenda, provide leadership, demonstrate a different approach to growth and development and value and measure progress differently, rather than by GDP alone. A just transition to a low-emission economy would lay the basis for this. We all have to take responsibility for the future, even if developed countries have the historical responsibility to provide leadership. This generation has the moral and ethical responsibility to make decisions to secure the survival of future generations. Africa must be part of this: if we can't be a voice for the poor and vulnerable, and act on their behalf, who else will be?

If a fair, ambitious and binding new climate deal is not reached, the world's poorest, especially in Africa, stand to suffer the most.
The powerful must keep this uppermost in their minds when reaching agreements. There is an African proverb: "when the elephants fight it is the grass that suffers". Recently a Zambian diplomat made an interesting observation: "the same is true for when elephants make love — the grass still suffers". When leaders reach agreement they should remember the grass.

DURWOOD ZAELKE

President of the
Institute for Governance
& Sustainable Development

The fast, forgotten half

Climate change is occurring faster than the world's leading scientists thought only a few years ago. The climate system is dangerously close to passing temperature tipping points for abrupt and irreversible changes, if it hasn't already done so.

One such is the melting of all the Arctic summer sea ice, which is already rapidly disappearing: once it has gone, it is replaced by darker water that absorbs more heat, accelerating warming. Another tipping point is the melting of the snow and ice in the Himalayan and Tibetan glaciers, which feed the major rivers of China, India, Pakistan and the rest of the region.

The Earth is speeding toward these and other tipping points with no signs of slowing down. Mitigation measures being discussed by the major countries all fall far short of what will be required to avoid abrupt and irreversible climate changes.

But there is also some good news. It starts with understanding that CO_2 from burning fossil fuels and

"A combination of non-CO_2 climate mitigation strategies can therefore help avoid the growing threat of abrupt and irreversible climate changes."

cutting forests is only responsible for about half of anthropogenic global warming, even though it has received the most attention from policymakers deliberating how to control climate change.

Aggressively reducing CO_2 pollution is essential for a safe climate system, but it is not sufficient. Indeed it is not only just half of the problem, but the slow half. Carbon dioxide emissions remain in the atmosphere for centuries or even millennia, so reducing them won't lead to cooling for at least a thousand years. We need to reduce CO_2 by 100 per cent by the middle of the century — but we need to do more as well.

This is where the other half of human-caused global warming comes in — the effects of aerosols and other gases, largely overlooked by policymakers. This is the fast half that can produce cooling in days to decades, and the one that may be easier to solve quickly in the near term. It deserves the urgent attention of policymakers. Much is already known about how to reduce these pollutants and, in many cases, there are laws in place that address them – and they could delay warming by up to 40 years.

A combination of non-CO_2 climate mitigation strategies can therefore help avoid the growing threat of abrupt and irreversible climate changes. Four such 'fast-action' strategies are discussed by Nobel Laureate Dr. Mario Molina and colleagues in a recent paper in the Proceedings of the National Academy of Sciences — reducing hydrofluorocarbons, or HFCs, black carbon soot and tropospheric ozone, and expanding bio-sequestration through biochar.

Rapid growth in the production of HFCs — synthetic chemicals used in air conditioning, refrigeration and in making foams — will make them a major contributor to climate change, responsible for up to 10 per cent of warming by 2050. Dr. Molina and his colleagues point out that the Montreal Protocol ozone treaty is ready, willing, and able to phase down HFCs, just as it has done for 96 other chemicals — a process that has already provided

"These fast-action mitigation strategies are win-win for both developed and developing countries. Many can be implemented now with available technology at a relatively low price, and they do not require a new global agreement."

climate mitigation equivalent to a net 135 billion tons of CO_2-equivalent, delaying climate forcing by up to 7–12 years.

They also point out that many alternatives to HFCs already exist and are on the shelf waiting for the right regulatory incentive to be deployed. Indeed there is growing political support for phasing down their production and consumption under the Montreal Protocol. The small island states of Micronesia and Mauritius proposed this last April. And the US, Canada, and Mexico submitted a similar proposal, in an unprecedented joint effort announced by President Obama, President Calderon and Prime Minister Harper.

Black carbon soot is another short-term forcer of climate change. Produced largely from incomplete combustion of fossil fuels, particularly in diesel vehicles, and through burning of biomass for heating and cooking in developing countries, it contributes up to 25 per cent of total warming and is responsible for much of the melting of snow and ice in the Arctic and Tibetan-Himalayan glaciers. It can be reduced significantly by using diesel particulate filters and solar or cleaner-burning biomass stoves.

Tropospheric ozone — or ground-level smog — provides up to 10 per cent of warming and is formed by a number of 'ozone precursor' gases such as carbon monoxide, nitrogen oxides, methane, and other hydrocarbons. It can be mitigated by increasing efficiency in industrial processes where most of these precursor gases are produced.

Cutting black carbon and tropospheric ozone makes sense for public health and food security as well as the climate. Both are major pollutants which damage health. Black carbon is a major contributor to 1.6 million deaths from indoor air pollution worldwide. Ozone is also a killer, and — according to one recent study — causes $14 billion to $26 billion of damage to crop yields annually.

Biochar offers a rare 'carbon-negative' strategy that can reduce existing concentrations of CO_2. The fine-grained charcoal product is produced by cooking biomass with little oxygen through pyrolysis, turning it to a stable form of carbon that can be ploughed into soil where it remains — and acts as a valuable fertilizer — for hundreds to thousands of years. Turning agricultural waste into biochar could save the emission of more than 3 billion tons of CO_2 per year by 2040. Under the most aggressive scenario, which would use plantation-grown biomass as well as waste, this might become 20 billion to 35 billion tons of CO_2 per year.

These fast-action mitigation strategies are win-win for both developed and developing countries. Many can be implemented now with available technology at a relatively low price, and they do not require a new global agreement. Though time is running out, we can still save ourselves if we take 'fast action' now on both halves — CO_2 and non-CO_2 — of the problem.

Climate change: Useful Links

This page contains links to websites from governments, international organizations, non-governmental organizations, businesses, media, and other groups from around the world to help you research issues related to climate change. We have compiled these links from our own review of the vast amount of information available on the Internet to help you to find the most relevant sources for your research. Our Planet magazine does not, however, endorse the viewpoints of any of the groups to which we link, and we cannot guarantee the accuracy of the information posted on these sites. Rather, we hope to provide you with a broad range of opinions and perspectives.

www.unep.org

Climate change website
www.unep.org/climatechange/
This is UNEP's homepage for climate change, one of our 6 priority areas. It has a depth of information on UNEP's Climate Change Programme, and relevant science, policy, publications, campaigns, news and events.

Seal the Deal
www.sealthedeal2009.org/
The UN-led Seal the Deal Campaign aims to galvanize political will and public support for reaching a comprehensive global climate agreement in Copenhagen in December.

Unite to Combat Climate Change
www.unep.org/unite/
This is the website of the United Nations campaign to encourage civil society and communities around the world to unite and act now to combat climate change.

Climate Neutral Network – CN Net
www.unep.org/climateneutral/
A UNEP initiative to promote global action and involvement in moving towards to a low-carbon and eventually climate-neutral society.

UN-REDD
www.un-redd.org/
REDD – reducing emissions from deforestation and forest degradation in developing countries – investigates creating financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands.

Plant for the Planet: Billion Tree Campaign
www.unep.org/billiontreecampaign/
People, communities, organizations, business and industry, civil society and governments are being encouraged to plant trees and enter their tree planting pledges on this website. The objective is to plant at least one billion trees worldwide each year.

UNEP-Risoe Centre on Energy, Climate and Sustainable Development
http://uneprisoe.org/
UNEP-Risoe supports UNEP in its aims to incorporate environmental and development aspects into energy planning and policy worldwide.

Energy website
www.unep.org/themes/energy/?page=home
Information on UNEP's key activities to address environmental consequences of energy production and use at the global and regional levels.

Action

Unite for Climate
http://uniteforclimate.org/
Unite for Climate is an entry point into the world of youth action on climate change. Find out how young people are responding to climate change, learn about their experiences, and join campaigns from around the world.

Time for Climate Justice
www.tcktcktck.org
This website was launched by a formidable coalition of non-governmental organizations calling themselves the Global Campaign for Climate Action.

You Control Climate Change
www.climatechange.eu.com
The European Commission's website provides information about climate change in 21 languages, including tips on how individuals can help bring it under control.

Global Action Plan
www.globalactionplan.org.uk
A UK environmental charity that helps households, workplaces, schools and the wider community to reduce their carbon footprints.

Climate change websites across the UN

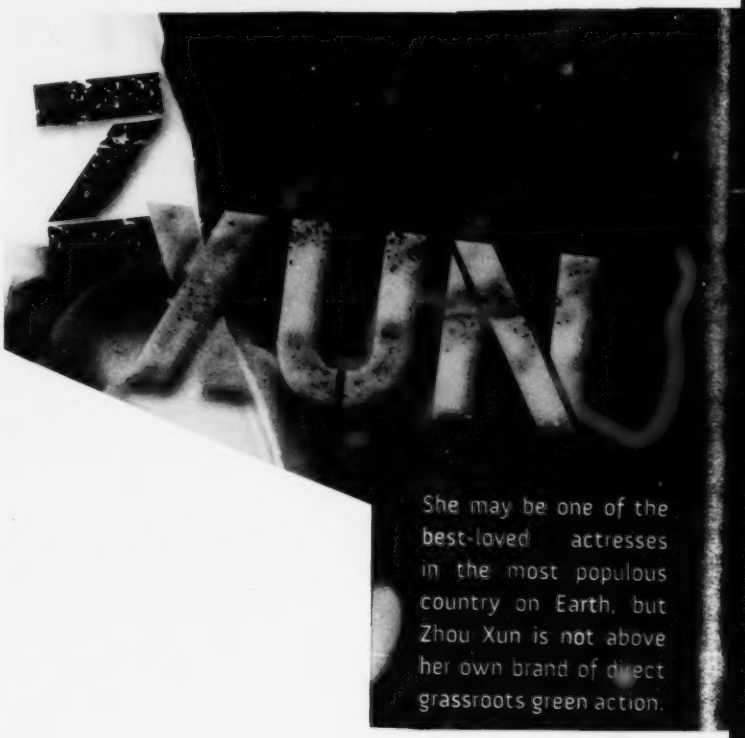
Gateway to the UN System's Work on Climate Change
www.un.org/wcm/content/site/climatechange/gateway
This website links to extensive information about the UN and climate change. It also links to the many UN partners on climate change.

World Tourism Organization
www.unwto.org/sustainable/climate/index.php
A climate change and tourism site of this specialized UN agency.

UNFCCC – The United Nations Framework Convention on Climate Change
www.unfccc.int
The UNFCCC is an international treaty about potential action to reduce global warming and to cope with temperature increases. The Kyoto Protocol is an addition to this treaty. The website contains numerous resources – for beginners or experts – relating to climate change and the UNFCC.

IPCC – Intergovernmental Panel on Climate Change
www.ipcc.ch/
The IPCC is the leading body for the assessment of climate change. It provides the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences.

WMO – The World Meteorological Organization
www.wmo.int/pages/about/index_en.html
The WMO is the UN system's authoritative voice on the state and behaviour of the Earth's atmosphere.



She may be one of the best-loved actresses in the most populous country on Earth, but Zhou Xun is not above her own brand of direct grassroots green action.

"She plants three trees for every 200 km of her car travel and is planting another 238 to offset the massive 149,483 km she flew last year."

She likes to recall how she has twice "given an earful" to complete strangers who she saw throwing rubbish out of their car windows. How they reacted after being shouted at by one of China's most famous faces is not recorded, but they are unlikely to have forgotten the experience.

In fact Zhou, who now spends much of her time encouraging people to reduce their carbon footprints through simple changes of lifestyle, believes in starting with herself. She caused a stir, after being appointed a United Nations Development Programme (UNDP) Goodwill Ambassador, by promising to give up baths and wearing fur. And she does not stop there.

"If the light is on, I switch it off," she told Our Planet. "When I wash my face or clean my teeth, I use little water. I start drying my hair with a towel and then blow dry, instead of using the drier when it is still wet. These may seem like odds and ends, but every bit of energy saving counts. There is no limit to the possibilities."

She takes her own chopsticks, mugs and shopping bags with her wherever she goes and tells how, on her last film set she insisted that the whole crew also abandon disposables. She says she now walks or bicycles where possible, rather than using her car and driver, and offsets her emissions when she does end up burning petrol.

She plants three trees for every 200 km of her car travel and is planting another 238 to offset the massive 149,483 km she flew last year. But should she be flying at all? "It is very difficult for me not to take flights because my schedule is so tight," she answers. "Today I'm in Beijing, tomorrow I'll be in Shanghai and, after that, I'll have to fly to Hong Kong."

The 35-year-old daughter of a film projectionist in Quzhou, a city of some 2 million people south-west of Shanghai, Zhou has become the most decorated performer in the country, with seven best actress or best supporting actress awards to her name. She says she has "been interested in the environment for many years" but became aware of the extent of the crisis through Al Gore's film, An Inconvenient Truth, and through Live Earth, a chain of concerts beginning in July 2007 to call attention to climate change.

"Degradation of the environment is the same as a person getting an incurable disease," she says. "But most people consider environmental consciousness and global warming to be distant from their daily routine. Nobody wants to leave their children with fewer trees and less-reliable rivers. So why sit and wait for others to move?"

Thus she spends much of her time promoting 'tips for green living' through Our Part, a campaign she runs jointly with UNDP. She urges people to "use less water, leave computers on standby, and turn off lights", to "wear (currently very trendy) organic cotton clothing", buy green products wherever possible, and "make reusable bags your new best friend".

Zhou, who will be the Green Ambassador for next year's World Expo in Shanghai, points out that if every car-owning family in China drove just 200 km less in a year, carbon dioxide emissions would be cut by "a whopping 460,000 tons" and adds: "With 300 million TV sets and 500 million mobile phones in China alone, unplugging appliances can make a difference."

She concludes: "Environmental protection is the responsibility of everybody and a little effort from all will go a very long way." But, as it happens, she stops short of advising people to shout at strangers..

UNite to combat
CLIMATE CHANGE

UNEP

www.unep.org/ourplanet